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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/797,266

Filing Date: March 10, 2004

Appellant(s): DENG ET AL.

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Dan C. Hu  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 8/4/2009 appealing from the Office action  
mailed 3/4/2009.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

### **(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

### **(8) Evidence Relied Upon**

5,692,184	Ardoine et al	11-1997
Cui et al, WO 03/030025 A1, "Database Management System", 10 April 2003.		
Bonatti et al, "An Ontology-Extended Relational Algebra", Proceedings from the Information Reuse and Integration 2003, IRI 2003, October 27-October 29, pp. 192-199.		

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 11-12 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cui et al [WO 03/030025 A1] in view of Ardoine et al [US 5,692,184] and Bonatti et al, *An Ontology-Extended Relational Algebra*.

With regard to claim 11, Cui teaches a functional relationship between one or more objects of distinct ontologies in a metadata system (see lines 8-10 on page 6 and lines 17-20 on page 10; a mapping is performed between the different/distinct ontologies where a conversion function is used in connection with the mapping of the distinct ontologies).

Cui does not explicitly teach generating a node to represent a functional relationship between one or more objects of distinct ontologies in a metadata system;

associating a metadata expression of the functional relationship to the node; and  
associating one or more parameters of the functional relationship to the node.

Ardoin and Bonatti teach generating a node to represent a functional relationship between one or more objects of distinct ontologies in a metadata system (see Ardo, col 6, lines 49-65; a node is generated that represents a functional relationship between different values; see Bonatti, the first two paragraphs under section 2.1 on page 192 and the first two paragraphs in the right column on page 196; conversion functions can be used to convert between different currencies from different ontologies);

associating a metadata expression of the functional relationship to the node (see Ardo, col 6, lines 49-65; a function/expression is associated with the function node, see Figures 6 and 7 for examples of expressions);

and associating one or more parameters of the functional relationship to the node (see Ardo, col 6, lines 39-48 and Figures 6 & 7; values nodes are used as input parameters to the expression/functional relationship).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the mapping server of Cui by using function nodes to keep track of the functional relationship between the different ontologies when using the conversion function as taught by Ardo and Bonatti in order to maintain data integrity when an object/data is modified between the different database and their respective ontologies.

With regard to claim 18, this claim is substantially similar to claim 11 and is rejected for the same reasons as discussed above. The only difference between claim 11 and 18 is that claim 18 recites a computer readable medium (see Ardoine, Figure 3, RAM 66 and Disk Drive 67).

With regard to claims 12 and 19, Cui in view of Ardoine and Bonatti teach associating a dependency chain representing the dependent relationships between properties of a parameter path associated with the one or more parameters of the functional relationship (see Ardoine, col 5, line 59 to col 6, line 3; dependency relations are identified and are used to by building one dependency relation upon another).

With regard to claim 15, Cui in view of Ardoine and Bonatti teach identifying mappings between dependency chains spanning the distinct ontologies (see Ardoine, col 5, line 59 to col 6, line 3; dependency relations are identified and are used to by building one dependency relation upon another; see Cui, lines 18-20 on page 10; mappings between different/distinct ontologies are identified).

With regard to claim 16, Cui in view of Ardoine and Bonatti teach utilizing heuristics to suggest alternative mappings between dependency chains (see Cui, lines 4-8 on page 9; heuristics executed by computers/machines are used to suggest possible/alternative mappings between the distinct ontologies).

With regard to claim 17, Cui in view of Ardoin and Bonatti teach maintaining the mappings that span the distinct ontologies when one of the distinct ontologies is modified (see Cui, lines 10-15 on page 9; when creating mappings between ontologies, if an ontology has been modified the system determines whether they can re-use a previous mapping, i.e. by reviewing the library of mappings and determine which previous mappings can be re-used).

Claims 13-14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cui et al [WO 03/030025 A1] in view of Ardoin et al [US 5,692,184] and Bonatti et al, *An Ontology-Extended Relational Algebra* in further view of W3C, *Resource Description Framework (RDF): Concepts and Abstract Syntax*.

With regard to claim 13, Cui in view of Ardoin and Bonatti teach all the limitations of claim 11 as discussed above and further teach a dependency chain (see Ardoin, col 5, line 57 to col 6, line 3; a dependency relation/chain is associated/aggregated with the nodes).

Cui in view of Ardoin and Bonatti teach generating a resource but do not explicitly teach the aggregating of a local name, type.

W3C teaches generating a resource (see first paragraph on page 8 of 27 in section 3.2; nodes/resources are created/generated) that aggregates a local name, type (see second paragraph in section 3.5 on page 11 of 27; nodes can be aggregated with rdf:type property which is a type as well as a name such as a predicate/column name).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the mapping server of Cu in view of Ardoин and Bonatti by using RDF graphs as a mapping of the distinct ontologies as taught by W3C in order to take advantage of a standard syntax that is used to represent information.

With regard to claim 14, Cui in view of Ardoин and Bonatti teach all the limitations of claim 11 as discussed above and further teach a dependency chain (see Ardoин, col 5, line 57 to col 6, line 3; a dependency relation/chain is associated/aggregated with the nodes) and that is associated to a name through an explicit mapping (see Cui, lines 4-6 on page 9; an explicit mapping/correspondence can be made by a human when mapping between distinct ontologies).

Cui in view of Ardoин and Bonatti teach generating a resource but do not explicitly teach generating a resource that aggregates a type.

W3C teaches generating a resource (see first paragraph on page 8 of 27 in section 3.2; nodes/resources are created/generated) that aggregates a type (see second paragraph in section 3.5 on page 11 of 27; nodes can be aggregated with rdf:type property which is a type).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the mapping server of Cu in view of Ardoин and Bonatti by using RDF graphs as a mapping of the distinct ontologies as taught by W3C in order to take advantage of a standard syntax that is used to represent information.

With regard to claim 20, Cui in view of Ardoин and Bonatti teach all the limitations of claim 18 as discussed above and further teach a dependency chain (see Ardoин, col 5, line 57 to col 6, line 3; a dependency relation/chain is associated/aggregated with the nodes).

Cui in view of Ardoин and Bonatti do not explicitly teach generating a blank node that aggregates a local name, and type.

W3C teaches generating a blank node (see second to last paragraph on page 8 of 27 in section 3.2; blank nodes are created) that aggregates a local name, type (see second paragraph in section 3.5 on page 11 of 27; nodes can be aggregated with rdf:type property which is a type as well as a name such as a predicate/column name).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the mapping server of Cui in view of Ardoин and Bonatti by using RDF graphs as a mapping of the distinct ontologies as taught by W3C in order to take advantage of a standard syntax that is used to represent information.

#### **(10) Response to Argument**

- A. Claims 11-12 and 15-19 were rejected under 35 U.S.C. § 103(a) as unpatentable over Cui (WO 03/030025) in view of Ardoин (U.S. Patent No. 5,692,184) and Bonatti (An Ontology-Extended Relational Algebra).
  1. Claims 11, 12, 18, 19.

**Appellant Argues:**

Appellant states (see the last paragraph on page 4 in section VII Argument through the third from last paragraph on page 5) that the Ardoин and Bonatti references "discloses or even hints at associating a metadata expression of the functional relationship (between one or more objects of distinct ontologies in a metadata system) to a node that represents the functional relationship. In particular, the appellant argues that the cited section provided by the Examiner (column 6, lines 49-65, and Figures 6 and 7 of Ardoин) do not hint or suggest that Ardoин teaches "associating a metadata expression of the functional relationship (between one or more objects of **distinct ontologies**) to a node that represents the functional relationship".

**Examiner Response:**

The Examiner respectfully disagrees. It is unclear as to the argument that the appellant is setting forth; however, due to the appellant highlighting "distinct ontologies", it appears that the appellant is arguing that the Ardoин reference does not show a functional relationship between distinct ontologies.

As noted in the 35 USC 103(a) rejection of the independent claims, Ardoин is not the primary reference. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). As discussed above in the 35 USC 103(a) rejection, the Cui reference on page 10, lines 17-23 discusses that the system stores mappings between ontologies. The Cui reference did not explicitly teach that the mappings

included nodes or that the conversion functions (i.e. the functional relationship) are associated with a node. Ardoin teaches the usage of a variety of nodes to represent a map of the relationship from one node to another node. Further, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the mapping server of Cui by using the function nodes of Ardoin to keep track of the functional relationship between the different ontologies when using the conversion function taught by Cui in order to maintain data integrity when an object/data is modified between the different database and their respective ontologies.

However, the appellant does not appear to be arguing the usage of the nodes of Ardoin with the mapping from Cui but instead focuses on Ardoin not teaching "**distinct ontologies**". The Oxford English Dictionary defines "distinct" as (emphasis added):

Separate or apart so as to be capable of being distinguished, or **as being different**; not confounded with each other, or with something else.

The Cui references states on page 9, lines 12-15 that "Such mappings require a mediator system that is capable of interpreting them in order to translate between **different ontologies**. It would be useful to include a library of mappings and conversion functions as there are many standard translations which could be used, eg converting kilos to pounds, etc." (emphasis added). As pointed out in the 35 USC 103(a) rejection, the Ardoin reference modifies the mappings of Cui in order to map between different ontologies. Although the Cui reference does not use the phrase "distinct" when describing the mappings between the different ontologies, Cui does teach distinct ontologies since the words distinct and different have similar meanings.

**Appellant Argues:**

Appellant states (see the last two paragraphs on page 5) that the Bonatti reference does not teach "associating a metadata expression of the functional relationship (between one or more objects of **distinct ontologies**) to a node that represents the functional relationship".

**Examiner Response:**

The Examiner respectfully disagrees. It is unclear as to the argument that the appellant is setting forth; however, due to the appellant highlighting "distinct ontologies", it appears that the appellant is arguing that the Bonatti reference does not show a functional relationship between distinct ontologies. Upon review of the reference, it appears that the appellant has mischaracterized the Bonatti reference. As discussed above in the previous argument, the Oxford English Dictionary defines "distinct" as "being different". Furthermore, the appellant admits in the first sentence of the second to last paragraph on page 5 that Bonatti teaches "integrating different ontologies". In other words, Bonatti teaches distinct ontologies. It is unclear as to how the appellant defines "distinct". The Examiner did not see any definition in the appellant's application specification that would run contrary to the accepted meaning as defined in the dictionary. Although the Bonatti reference does not use the phrase "distinct", Bonatti does teach distinct ontologies since the words distinct and different have similar meanings and also because the appellant has admitted that Bonatti teaches distinct (different) ontologies.

**Appellant Argues:**

Appellant states (see the first paragraph on page 6) that "no reason existed that would have prompted a person of ordinary skill in the art to combine the teachings of Cui, Ardoine, and Bonatti". In particular, the appellant argues that "modifying Cui with the teachings of Bonatti would have resulted in a significant change in the principle of operation of the Cui system, which is an indication that a person of ordinary skill in the art would not have been prompted to make the combination/modification proposed by the Examiner".

**Examiner Response:**

The Examiner respectfully disagrees. The appellant's argument is directed to the incorporation of the teachings of Bonatti with Cui. However, the appellant appears to have mischaracterized the references. In particular, Cui discusses using the mapping server to map between different ontologies as well as the usage of a conversion function. The Bonatti reference was used to provide an example of the conversion function that uses a metadata expression (i.e. an expression that describes other data) such as a currency conversion function. Despite the appellant's assertions, it would have been obvious to one of ordinary skill in the art to modify the conversion function of Cui by using a specific conversion function such as a currency conversion function as disclosed by Bonatti in order to perform particular conversions between ontologies such as price conversions between a variety of currencies.

**Appellant Argues:**

Appellant states (see the second through fifth paragraphs on page 6) that for the reasons presented above, the "obviousness rejection of claim 11 and its dependent claims" as well as "independent claim 18 and its dependent claims" are erroneous.

**Examiner Response:**

The Examiner respectfully disagrees. As discussed above, the cited prior art references teach all the claim limitations therefore the rejections for independent claims 11 and 18 and their respective dependent claims still stand because the rejections made to these claims were not erroneous.

**2. Claims 15-17.**

**Appellant Argues:**

Appellant states (see the second to last paragraph on page 6 through the second paragraph on page 7) that claim 15 and its dependents are allowable because there "is no teaching or hint in Cui of mappings between **dependency chains** spanning distinct ontologies.

**Examiner Response:**

The Examiner respectfully disagrees. As discussed above in the 35 USC 103(a) rejection, in particular with regard to claim 12, the Examiner identified that Cui in view of Ardoen teaches the dependency chains spanning different ontologies. The particular teaching of the dependency chain was found in the teachings of Ardoen, in particular column 5, line 59 to column 6, line 3. As discussed above, Cui teaches the

mapping between different ontologies where the mapping includes dependency chains (per the teachings from Ardoen). The Examiner notes that the appellant's arguments are a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. It appears that the appellant has only provided mere conclusory statements without providing any evidence as to how the language of the claims differentiate the claims from the cited prior art. The Examiner notes that the arguments of counsel cannot take the place of evidence in the record. See MPEP 2145(I).

**B. Claims 13-14 and 20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Cui in view of Ardoen and Bonatti and further in view of W3C (Resource Description Framework (RDF): Concepts and Abstract Syntax).**

**1. Claims 13, 14, 20.**

**Appellant Argues:**

Appellant states (see the last two paragraphs on page 7) that claims 13, 14, and 20 are allowable for the depending upon allowable base claims.

**Examiner Response:**

The Examiner respectfully disagrees. As discussed above in the 35 USC 103(a) rejection as well as in the above arguments, the rejections for the independent claims still stand. Therefore, the rejections for claims 13, 14, and 20 still stand.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/MARC SOMERS/

Examiner, Art Unit 2159

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